



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/484,376	01/14/2000	Oved Shlomo Frank Zucker	APT:027	9632
ROSSI & ASSOCIATES P.O. Box 826 Ashburn, VA 20146-0826			EXAMINER LEE, DIANE I	
			ART UNIT 2876	PAPER NUMBER 10
DATE MAILED: 09/01/2005				

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/484,376

Applicant(s)

ZUCKER, OVED SHLOMO FRANK

Examiner

D. I. Lee

Art Unit

2876

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 24 January 2005.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-19 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-19 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

1. Receipt is acknowledged of the Amendment filed 24 January 2005.

Claim Rejections - 35 USC § 112

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3. Claims 1-19 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Re claim 1: Lines 2+ read, "an optical triggering circuit at a first location within a substantially benign electronic environment ... a power circuit located at a second location remote from the first location within a substantially harsh electronic environment". The recitation of the first and second locations (i.e., within a substantially benign electronic environment and remote from the first location within a substantially harsh electronic environment, respectively) does not structurally define the optical triggering circuit and the power circuit, thus, the specific structure of the optical triggering circuit and the power circuit in such locations are vague and indefinite. Applicant has failed to define the specific structure of the optical triggering circuit and the power circuit at such locations, i.e., within a substantially benign electronic environment and remote from the first location within a substantially harsh electronic environment, respectively.

Re claim 4: Lines 1+ read, "the power circuit having at least one leg including a pair of transistors, each transistor including base coupled in series to a corresponding photoconductor (i.e., there are two transistors in the power circuit), wherein activation of the corresponding photoconductor turns on the transistor". It is unclear as to which transistor of the pair of transistor are turn on when the corresponding photoconductor is activated, i.e., is it one of the

Art Unit: 2876

pair transistors or both transistors? Therefore, claims 1 and 4 and claims depend therefrom, claims 2-3, 5-17, and 19, are vague and indefinite.

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 1-3 and 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Zucker et al. [US 6,218,682-referred as Zucker].

Re claim 1: Zucker discloses an apparatus comprising:

an optical triggering circuit (optical switch 428) at a first location of the apparatus, wherein the optical triggering circuit generates an optical trigger signal (see col. 10, lines 22+ and figure 4b);

a power circuit (a high voltage source 430) located at a second location of the apparatus remote from the first location, wherein the power circuit includes a light controlled thyristor (LDT) 100 that is responsive to the optical trigger signal generated by the optical triggering circuit (see col. 4, lines 40+);

a signal transmission connection (i.e., the figure 4b shows the signal connection between the optical triggering circuit and the power circuit but not specifically identified in the figure) coupling the optical triggering circuit to the power circuit; and

Art Unit: 2876

wherein the power circuit is directly driven by the transmission of the optical trigger signal from the optical triggering circuit to the power circuit via the optical transmission connection.

Zucker does not specifically teach the power circuit includes a photoconductor and the optical cable coupling the optical triggering circuit to the power circuit.

However, Zucker teaches the power circuit having a light controlled thyristor (LDT) 100 which provides an equivalent claimed function of the photoconductor (i.e., a switch that is activated in response to the optical trigger signal generated by the optical triggering circuit), and the signal transmission connection that providing the signal connection between the optical triggering circuit and the power circuit also provides an equivalent claimed function of the an optical cable coupling the optical triggering circuit to the power circuit. Therefore, it would have been obvious to an artisan of ordinary skill in the art at the time the invention was made to recognize that the apparatus of Zucker could be modified with other switching or triggering means so long as it provides an equivalent function and result. Accordingly, it would have been obvious expedient.

With respect to the specific locations of the optical triggering circuit and the power circuit, i.e., within a substantially benign electronic environment and remote from the first location within a substantially harsh electronic environment, respectively, the Examiner finds no structural difference in the claimed invention and the apparatus of Zucker. Accordingly, since Applicant has not clearly defined the structure of the optical triggering circuit and the power circuit at such locations, there are no patentably distinguish between the claimed invention and the prior art. Therefore, the apparatus of the Zucker meets the claimed structure of the optical triggering circuit and the power circuit. Furthermore, the specific recitations of the optical triggering circuit and the power circuit locations would have been an obvious intended use of the claimed

Art Unit: 2876

invention. The claimed invention and the prior art must result in a structural difference in order to patentably distinguish the claimed invention from the prior art. If the prior art structure is capable of performing the intended use, then it meets the claim. In a claim drawn to a process of making, the intended use must result in a manipulative difference as compared to the prior art. See *In re Casey*, 370 F.2d 576, 152 USPQ 235 (CCPA 1967) and *In re Otto*, 312 F.2d 937, 939, 136 USPQ 458, 459 (CCPA 1963).

Re claim 2: the apparatus further comprising a control processor 442 coupled to the optical triggering circuit, wherein the optical triggering circuit is responsive to receipt of a command signal from the control processor to generate the optical trigger signal (see col. 4, lines 38+; col. 10, lines 24+; and figure 4B).

Re claim 3: Zucker teaches that the optical switching system is utilized in a motor control and switching power supply (see col. 4, lines 37+), and the optical triggering circuit is coupled to the high voltage source 430 which serves as applicant's claimed DC motor (see col. 10, lines 10+)

Re claim 18: Zucker teaches that the optical triggering circuit utilizes a laser diode to generate the optical triggering circuit (see col. 10, lines 46+).

3. Claims 4-6 (as best understood), and 16-17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Zucker in view of Beeston et al. [US 4,485,434-referred as Beeston]. The teachings of Zucker have been discussed above.

Re claims 4-6 and claims 16-17: Although Zucker teaches the photoconductor comprises a photoconductivity controlled channel transistor (see col. 9, lines 57+), Zucker fails to teach or fairly suggest the power circuit having at least one leg including a pair of transistors,

Art Unit: 2876

each transistor including a base coupled in series to a photoconductor, wherein activation of the photoconductor turns on the transistor.

Beeston teaches the power circuit having at least one leg including a pair of transistors 37, 38, each transistor including a base coupled in series to a shunt photoconductor (opto-isolator 46, 45 having a modified electrode structure) wherein activation of the photoconductor turns on the transistor (see col. 4, lines 26+ and figure 1b).

It would have been obvious to an artisan of ordinary skill in the art at the time the invention was made to incorporate the power circuit of Beeston in the apparatus of Zucker in order to provide a simplified power circuit to control the power circuit.

4. Claims 7-15 and 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Zucker as modified by Beeston as applied to claim 4 above, and further in view of the applicant's admitted prior art of the record. The teachings of Zucker as modified by Beeston have been discussed above.

Zucker as modified by Beeston fails to teach the electrode structure including a plurality of strips formed on a surface of the photoconductive diode, wherein the strips have a width of about $10\mu\text{m}$, a thickness of between $0.25\text{-}10\mu\text{m}$, are separated by gaps having a width of about $40\mu\text{m}$, and can carry at least 20A for 50 ns.

Applicant admitted that a conventional diode can be modified to achieve the operational performance required of the system architecture, namely, a C30808E diode manufactured by EG&G Canada can be modified to carry 20 to 100A for about 50 ns, wherein the electrode structure of C30808E diode manufactured by EG&G Canada includes a plurality of strips formed on a surface of the photoconductive diode, and the strips have a width of about $10\mu\text{m}$, a

Art Unit: 2876

thickness of 0.25-10 μ m, are separated by gaps having a width of about 40 μ m, and can carry at least 20A for 50 ns,

(see page 8, lines 17+ and figure 6).

It would have been obvious to an artisan of ordinary skill in the art at the time the invention was made to incorporate the conventional modifiable diode (i.e., such as a C30808E diode manufactured by EG&G Canada) in the power circuit of Zucker as modified by Beeston in order to achieve the desired operational performance required of the system architecture.

Response to Arguments

4. In response to Applicant's remark with respect to 35 U.S.C. 112 on claims 4-17 and 19 that Applicant has amended the claim to make clear that each transistor with a leg is coupled to a corresponding photoconductor. Claim 4, lines 1+ read, "the power circuit having at least one leg including a pair of transistors (i.e., there are two transistors in the power circuit) ... wherein activation of the corresponding photoconductor turns on the transistor. The claim does not clearly recites which transistor of the pair of transistor are turn on when the corresponding photoconductor is activated, i.e., is it one of the pair transistors or both transistors? Appropriate clarification and/or correction are required.

5. Applicant argued with respect to Zucker reference that Zucker does not disclose or suggest locating an optical triggering circuit in a benign electronic environment, while placing a power circuit that is driven by the optical triggering circuit in a harsh electronic environment (see page 5, lines 7+). The Examiner finds no structural difference in the claimed invention and the apparatus of Zucker. Applicant has not clearly defined the structure of the optical triggering circuit and the power circuit at such locations in the claim. There is no patentably distinguished between the claimed invention and the prior art. The specific recitations of the optical triggering

Art Unit: 2876

circuit and the power circuit locations would have been an obvious intended use of the claimed invention. The claimed invention and the prior art must result in a structural difference in order to patentably distinguish the claimed invention from the prior art. If the prior art structure is capable of performing the intended use, then it meets the claim. Therefore, the apparatus of the Zucker meets the claimed structure of the optical triggering circuit and the power circuit. Accordingly, Applicant's argument on this point is not persuasive.

Conclusion

6. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to D. I. Lee whose telephone number is (571) 272-2399. The examiner can normally be reached on Monday through Thursday from 5:30 AM to 4:00 PM.

Art Unit: 2876

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Michael G. Lee can be reached on (571) 272-2398. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



D. I. Lee
Primary Examiner
Art Unit 2876